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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/672,304 | 09/26/2003 | Young-Je Cho | 8071-47 (OPP 030615 US) | 4451 |

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| EXAMINER |
|---|
| DUONG, TAI V |

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/672,304 | CHO ET AL. | |
| | Examiner | Art Unit | |
| | Tai Duong | 2871 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *02 April 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *3-7,13,14 and 22-35* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *13 and 14* is/are allowed.

6)☒ Claim(s) *3-5,22-24,28-31 and 33-35* is/are rejected.

7)☒ Claim(s) *6,7,25-27 and 32* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *02 April 2007 and 26 September 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *6/22/07*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

The new sheet of Fig. 13A has been accepted.

The objection to the drawings and the rejection under 35 USC 112 of the last Office action are withdrawn in view of Applicant's remarks and amendments.

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 4, 5, 23, 24, 28 and 29 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The specification does not disclose how to make a display device (the *final* product) having *both* the feature "*contact areas* of the first and second spacers are *different*" and the feature "a *height difference* between the first spacer and the second spacer is in a range of about 0.3-0.6 microns" (claims 4, 24), "a *height* of the second spacer is *lower* than the first spacer" (claims 5, 23), or "wherein the spacers further comprise a third spacer, a second spacer has a height lower than the first spacer, and the third spacer having a height equal to (claim 29) or lower than the second spacer" (claims 28).

The specification does disclose the display device (the *final* product) having *contact areas* of the first and second spacers being *different* and the first and second spacers having same height (Fig.2; specification, page 6, lines 20-

27; page 16, lines 23-27, page 17, lines 6-22). It is noted that the *panel* of Fig. 3 (the *intermediate* product) has the feature "a height difference between the first spacer and the second spacer is in a range of about 0.3-0.6 microns", not the *display device* of Fig. 2 (the *final* product). The same reasons are also applied to claims 28 and 29 (specification, page 16, lines 23-27, page 17, lines 6-22).

Claim 34 is objected to because of the phrase "the spacer". The phrase "the spacer" should be "the spacers" because of the plurality of column spacers recited in claim 22.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 3, 5, 22, 23, 30, 33 and 35 are rejected under 35 U.S.C. 102(e) as being anticipated by Hiroshima et al (US 2003/0025868).

In this rejection, the recited phrase "at least *a portion* of the spacers" has been interpreted by the examiner as "at least one of the plurality of column spacers".

Note Figs. 2 and 4 which identically disclose the claimed display device comprising a first substrate SUB1 (the thin film transistor substrate), a data line

intersected with a gate line (these lines are inherent with the thin film transistor substrate SUB1, paragraph 0052), a second substrate SUB2 facing the first substrate, a plurality of column spacers (SP1, SP2, SP3) formed on at least one the first and second substrates, wherein the spacers comprise a first spacer SP3 and a second spacer SP1, contact areas of the first SP3 and second SP1 spacers are different (Fig. 4), at least one of the spacers (SP1, SP2) has a tapered structure (Fig. 2, paragraph 0022), at least a portion of the spacers (SP1) is overlapped with the blocking layer BM (paragraph 0058), and a height of the second spacer SP1 is lower than the first spacer SP3 (paragraph 0055).

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claim 4, 24, 28 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hiroshima et al (US 2003/0025868).

As to claims 4 and 24, the only difference between the display device of Hiroshima et al and that of the instant claims is Hiroshima et al are silent about the height difference between the first spacers and the second spacers being in a range of about 0.3-0.6 microns. However, it has been held that, where the only difference between the prior art and the claims was a recitation of relative dimensions of the claimed device and a device having the claimed relative dimensions would not perform differently than the prior art device, the claimed

device was not patentably distinct from the prior art device. In *Gardner v. TEC Systems, Inc.*, 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), *cert. denied*, 469 U.S. 830, 225 USPQ 232 (1984).

As to claims 28 and 29, the only difference between the display device of Hiroshima et al and that of the instant claims is the height of the third spacer being equal to the height of the second spacer. It would have been obvious to a person of ordinary skill in the art to employ in the display device of Hiroshima et al the third spacer having height equal to that of the second spacer for simplifying the fabrication process of the spacers.

Claim 31 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hiroshima et al (US 2003/0025868) in view of Satoh (US 6,870,593) of record.

The only difference between the display device of Hiroshima et al and that of the instant claim is the color filters having different thicknesses. Satoh discloses that it was known to employ color filters having different thicknesses (23, 24, 25 in Fig. 12B) for realizing originally designed color tones. Thus, it would have been obvious to a person of ordinary skill in the art in view of Satoh to employ color filters having different thicknesses in the display device of Hiroshima et al for obtaining a color display with high color purity.

Claim 34 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hiroshima et al (US 2003/0025868) in view of Sonoda et al (US 6,433,852) cited by Applicant.

The only difference between the display device of Hiroshima et al and that of the instant claim is at least a portion of the spacers overlapped with at least a

portion of the data line. Sonoda et al disclose in Figs. 2 and 4 a plurality of spacers SP being overlapped a portion of the data lines SD2 and the blocking layer (black matrix BM) in plan view (col. 10, lines 53-65). Thus, it would have been obvious to a person of ordinary skill in the art in view of Sonoda et al to employ in the display device of Hiroshima et al at least a portion of the spacers overlapped with at least a portion of the data line for not lowering the aperture ratio and the display quality of the display device as compared to the case wherein the plurality of spacers are overlapped with the pixel electrodes.

Claims 6, 7, 25-27 and 32 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 6, 7, 25-27 and 32 are allowed over the prior art of record. None of the prior art of record discloses or suggests a display device having structure recited in claim 3 or 22 in combination with the feature "wherein the second spacers have a length larger than the first spacers by 10-20 microns", the feature "wherein the second spacers have a length in a range of about 30-35 microns and the first spacers have a length in a range of about 15-20 microns" or the feature "wherein a concentration of the second spacers is about 200-600/$cm^2$ and a concentration of the first spacer is about 250-450/$cm^2$".

Claims 13 and 14 are allowed for the same reasons set forth in the last Office Action.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Applicant's arguments with respect to claims 3, 22 and 35 have been considered but are moot in view of the new ground(s) of rejection.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication should be directed to Tai Duong at telephone number (571) 272-2291.

The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

TVD

07/07

TOAN TON
PRIMARY PATENT EXAMINER